

EFFECT OF NEEM DERIVATIVES ON ADULT EMERGENCE OF *DYSDERCUS CINGULATUS* (HETEROPTERA: PYRRHOCORIDAE)

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ABSTRACT

Neem oil and neem cake extract were evaluated for their adult emergence effect on the nymphs and adults of *Dysdercus cingulatus*. The data indicated that total inhibition by neem oil varied from 46.66%, 60.00% and 66.66% and in Neem cake extract from 20.00%, 33.33% and 40.00% at a concentration range of 2.0%, 3.5% and 5.0%. At a similar concentration range, the nymphal mortality by neem oil and neem cake extract ranged from 13.33% to 53.33% and 6.66% to 13.33% in the fifth instars. *Azadirachta indica* A.Juss was used for controlling the insects which gave a significant mortality and suppressed the adult emergency effect of *Dysdercus cingulatus*. An increase in the concentration of test solutions resulted in an increase in the inhibition rate.

KEY WORDS: *Dysdercus cingulatus*, *Azadirachta indica*, adult emergence, mortality and inhibition.

1. INTRODUCTION

The red cotton bug, *Dysdercus cingulatus*, the sucking pest, is one of the important pests of Bhendi, Cotton and serious damage to many vegetable crops. When the crop is only few weeks old, the nymphs and adults feed and cause extensive damage to the plant. The fruits become stunted in growth and deformed in shape. The infested fruits become distorted and unfit for human consumption. Pest control methods are aimed to combat the different stages of insects of which all the stages are vulnerable. Many synthetic insecticides are

recommended for the control of this pest but most of them are found to be ineffective. There is, therefore, a need to search for viable alternatives for an effective control of this pest. The use of various plant products, especially neem *Azadirachta indica* against insect pests is gaining importance as it contains azadirachtin, considered to have an antifeedant property Schmutterer (1990). Controlling the pest population in the egg stage itself decreases the rate of emergence of pest population. This factor is one of the important aspects of the present investigation for choosing the *D. cingulatus* for the evaluation of Bioefficacy of neem derivatives.

2. MATERIALS AND METHODS

The egg masses of the test insect were collected from the field and incubated at room temperature. Adult emergence effect of Neem oil and neem cake extract was studied at 2.0%, 3.5% and 5.0% against the fifth nymphal instars of *Dysdercus cingulatus*. The treatment was done by dipping the vegetables of Bhendi in desired concentration and the solvent was allowed to evaporate under an electric fan for 20 minutes. Observations were recorded nymphal instars get an adult stage and the adult are laid the eggs. The percentage of nymphal mortality, malformed adult, normal adult and the total inhibition were noted under the experiment.

3. RESULT AND DISCUSSION

Adult emergence includes total inhibition, normal adult, pupal mortality and deformed adults. Adult emergence effect of neem oil and neem cake extract at different concentrations tested against the nymphal stages of *D. cingulatus* are presented in the Table – I. The efficacy of neem oil and neem cake extract on Adult emergence on fifth nymphal instars of *Dysdercus cingulatus*. Fed with vegetables, treated with neem oil, neem cake extract at 2.0%, 3.5% and 5.0% concentration of the fifth nymphal instars of *Dysdercus cingulatus* results in the nymphal mortality 13.33% to 53.33%, 6.66% to 13.33%, malformed adult of *Dysdercus cingulatus* 33.33% to 13.33%, 13.33% to 26.66%, Total inhibition of neem oil and neem cake extract 46.66% to 66.66% and 20.00% to 40.00% and normal adult formation of *Dysdercus cingulatus* 53.33% to 33.33% and 80.00% to 60.00% respectively. From the result it was inferred that neem oil had higher effect than neem cake extract. This is in accordance with the earlier findings of Meena and Bhargava(2005) on *Corcyra cephalonica*. An increase in the concentration of the test solutions resulted in an increase in the inhibition rate of adult of *D.cingulatus*. This corroborates with the findings of Shanmugapriyan and Kingsley (2003) on

Epilachna vigintiopunctata. Bioefficacy effect of neem oil has highest effect than neem cake extract. This observation correlated with the earlier findings of Umamaheswari *et al.*, (2007) on *D.cingulatus*, jeyakumar *et al.*, (1999) on *helicoverpa armigera* and sahayaraj *et al.*, (2006) on *D.cingulatus*. It was observed in the present investigation that the neem derivatives at different concentrations had suppressed or inhibited the adult emergence. The total inhibition of neem oil was higher than neem cake extract. From these results, it was obvious that neem oil and neem cake extract possessed the growth inhibition property against *D. cingulatus* and that the effect increased with increase in concentration.

Table-I Efficacy Of Neem Oil, Neem Cake Extract And Endosulfan On The Adult Emergence Of *Dysdercus Cingulatus*

| TREATMENT | CONCENTRATION (%) | NYMPHAL MORTALITY (%) | MALFORMED ADULT (%) | NORMAL ADULT (%) | TOTAL INHIBITION (%) |
|-------------------|-------------------|-----------------------|---------------------|---------------------|----------------------|
| NEEM OIL | 2.0 | 13.33 (2.00)bc | 33.33 (5.00)ef | 53.33 (8.00)bc | 46.66 |
| NEEM OIL | 3.5 | 20.00 (3.00)c | 40.33 (6.00)f | 40.00 (6.00)ab | 60.00 |
| NEEM OIL | 5.0 | 53.33 (8.00)d | 13.33 (2.00)bc | 33.33 (5.00)a | 66.66 |
| NEEM CAKE EXTRACT | 2.0 | 6.66 (1.00)b | 13.33 (2.00)bc | 80.00 (12.00)e | 20.00 |
| NEEM CAKE EXTRACT | 3.5 | 13.33 (2.00)bc | 20.00 (3.00)cd | 66.66 (10.00)cde | 33.33 |
| NEEM CAKE EXTRACT | 5.0 | 13.33 (2.00)bc | 26.00 (4.00)de | 60.00 (9.00)cd | 40.00 |
| CONTROL | | 0.00 (0.003)a | 0.00 (0.003)a | 100 (15.00)f | 0.00 |

Values mean of three replications Means followed by a common letter are not significantly different at the 5% level by DMRT

4. CONCLUSION

In the present investigation that the neem derivatives at different concentrations had adult emergence effect against *D. cingulatus*. Adult emergence effect of neem oil was higher than neem cake extract. The results obtained from the present experiments clearly suggest that neem oil could be used as an agent for control of *D. cingulatus*.

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